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Calprotectin Pegylation Enhanced Its Physical and Structural Properties.

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Abstract

Calprotectin is member of the S-100 protein family with a wide plethora of intra-and extracellular functions. Anticancer activities, antimicrobial effects and being a qualified disease marker are among the compelling features of this protein to be used as a pharmaceutical agent. However, there are several impediments to applications of protein pharmaceuticals including: proteolytic degradation, short circulating half-life, low solubility and immunogenicity. Pegylation is a common bioconjugation polymer capable of overcoming these drawbacks. Recombinant expression and purification of calprotectin along with its pegylation would result in enhanced pharmaco-dynamic and pharmacokinetic properties. Our florescence spectroscopy and far Ultraviolet-optical density results indicate that pegylation altered the physical and structural properties of the calprotectin to become in a more stable and functionally active state. Due to enhanced pharmacodynamic and pharmacokinetic properties of the calprotectin via pegylation, this study would pave the way for better in vitro and in vivo validations of calprotectin applications in medical practice.

KEYWORDS: Calprotectin; Fluorescence; Pegylation; UV-CD

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